Report of the Public Safety Radio System Investigating Committee

September 1998

Jim Glover, Chair
Teresa Loar
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967-054

Office of the City Council

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September 22, 1998

Honorable Mayor Emanuel Cleaver II:

You established the Public Safety Radio System Investigating Committee to explore the city's acquisition of the current public safety radio system, determine where the process failed, and recommend future process improvements. We appreciate the gravity of the responsibility you placed on us and have made a diligent and thorough effort to identify problems related to the radio system.

We received testimony from 17 current and former city staff members as well as radio system vendors. Staff assigned to our committee reviewed and reported on over 3,700 city documents and records related to the public safety radio system. This report presents our conclusions and recommendations.

We found no single act or person responsible for all of the problems affecting the city's public safety radio system; however, mistakes were made by the city's radio consultant, radio vendor, and city staff. The consultant's specifications provided inadequate in-building coverage. The city's current radio consultant (RCC) has indicated that actual in-building signal loss is fifty (50) times that indicated by the bid specifications.

The radio vendor who met the flawed specifications of the city's Invitation for Bid (IFB) did not properly install the radio system. A system audit conducted by the current radio consultant found that many pieces of the radio system's backbone equipment were inoperative, misaligned, or out-of-specification. The radio vendor's customer service was abysmal.

The selection process for both the consultant and radio vendor had many shortcomings. Rather than selecting the most qualified firm and then negotiating the best price, city staff used a purchasing process in which price was the determining factor. City staff also erred by not obtaining a second expert opinion when they began to lose confidence in the original radio consultant's work and recommendations. Other problems with the contractors and contracting process are detailed in the body of the report.

We have included eleven recommendations for your consideration. Many of these recommendations concern communications and contracting issues.

The committee thanks those individuals who testified and those who provided staff assistance.

Public Safety Radio System Investigating Committee

Jim Glover
Chairman

Teresa Loar
Councilmember

Kelvin Simmons
Councilmember

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REPORT OF THE PUBLIC SAFETY RADIO SYSTEM INVESTIGATING COMMITTEE

COMMITTEE BACKGROUND

In May 1998, Mayor Emanuel Cleaver appointed councilmembers Kelvin Simmons and Teresa Loar to serve with Chairman Jim Glover on the Public Safety Radio System Investigating Committee. This committee was appointed to explore the early decisions made on the radio system, identify what went wrong in the original radio system acquisition, and offer recommendations to improve city processes so that the city could avoid similar problems in the future. The city auditor acted as staff to the committee.

Ordinance 980734 formally created the Public Safety Radio System Investigating Committee in June 1998 and empowered the committee to "do all things necessary and proper to fully investigate the development of the current public safety radio system." This ordinance established the committee's authority to subpoena witnesses and documents. A second council committee, chaired by Councilmember Simmons, is acting as an oversight committee, to ensure that improvements to the system will result in a radio system that meets the city's expectations.

SCOPE OF COMMITTEE WORK

The members of the Public Safety Radio System Investigating Committee held an initial meeting on May 26, 1998. Assistant City Manager Rich Noll reconstructed and summarized the radio system's history for the committee. The committee then identified questions to which answers would be sought, identified methods to use, established a weekly meeting schedule, and outlined the final product the committee anticipated producing. The committee agreed to investigate the following five issues:

1. How did city staff communicate with council on the radio project?

2 Why did Sachs/Freeman Associates, the city's technical consultant on the radio system, recommend several different signal strengths before settling on one that is now viewed as inadequate? When did the city first know that the signal strength was inadequate?

3. Do the current hand-held radios and batteries meet city specifications for operation in heat and water? Is the radio equipment appropriate for the intended purposes?

4. How did the city initially decide, without in-depth study, that the radio system would cost $19.6 million?

5. Has the city made adequate budget provisions for operating and maintaining the system?

METHODOLOGY

The committee also agreed that testimony before the committee and documents presented to the committee would be appropriate methods for gathering information to be used to answer the questions the committee initially selected to investigate. Based on these original decisions, the committee gathered the following information.

1. Seventeen current and former city staff members testified. Representatives from both Ericsson and Motorola also appeared before the committee. SFA declined to send a representative.

2. The City Manager and City Auditor's offices supplied summaries and copies of documents related to issues and questions discussed by the committee.

3. City staff reviewed 3,726 city documents related to the purchase of the radio system. The Police Department reviewed 1,308 documents. An index was created for each set of documents and provided to the committee for review. A time line based on the documents reviewed was also created for committee use.

4. A comparison of planned versus actual expenditures, a list of project vendor payments, a spreadsheet of non-safety bond funds allocated in support of the radio system, and budgeted radio operating and maintenance summaries were prepared by the Finance Department and the Office of Management and Budget for committee review.

5. A Booz Allen & Hamilton report on 800 MHz radio systems was described in testimony before the committee and copies of the report were distributed to the committee. A July 7, 1998, RCC Consultant report was also distributed.

RADIO SYSTEM BACKGROUND

FCC decisions moved public safety radio users onto more expensive systems

A March 1998 Booz Allen & Hamilton study examined public safety communications in the spectrum located around the 800 MHz band.[1] Booz Allen reported that decisions the Federal Communications Commission (FCC) began making in 1974 resulted in the forced migration of public safety radio users to 800 MHz band. The study concluded that 800MHz are not universally better or worse than other portions of the spectrum and will work if enough money is spent on the system.

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[1] *A Study to Assess the Relative Merits of Spectrum Around 800 MHz as an Operating Frequency Band for Public Safety Communications*, Booz Allen & Hamilton, March 1998.

Radio frequencies are a finite resource that are assigned and allocated by the FCC. As the need for additional channels grew and the lack of additional spectrum resources at the lower frequencies was recognized, the FCC developed policies to encourage the efficient use of the spectrum and increase interoperability among communications systems.

The FCC systematically re-assigned public safety users to channels in the 800 MHz spectrum as these users requested new or additional channels. The FCC had hoped the assignment of public safety users to these channels would promote interoperable communications among local, state, and federal public safety agencies. However, the lack of system standardization resulted in a proliferation of a variety of incompatible trunked 800 MHz systems.

The forced migration of public safety radio users to 800 MHz radio systems also had the unanticipated effect of increasing the cost of public safety radio systems. An inverse relationship between frequency and range exists in 800 MHz radio systems. As frequency increases, range decreases. To achieve improvements in coverage and make the systems work, more equipment and infrastructure are required. The additional towers and other infrastructure needed to implement 800 MHz systems are costly, but necessary to ensure adequate coverage.

The FCC also encouraged the use of trunking technology to make more efficient use of the available 800 MHz spectrum.[2] Trunking technology is a newer and more expensive technology. Trunking technology automatically monitors and assigns each call to the next available channel. Again the result is a system that costs more than a conventional, lower frequency system.

While the Booz Allen study concluded that ample funding could make 800 MHz systems work, the study found that 800 MHz systems were having problems. Users reported more dead spots, deficiencies in portable-to-portable in-building coverage, and signals were affected more by foliage and changes in terrain than were the older systems. Training was also reported as a significant operational problem.

History of Kansas City's Public Safety Radio System

Between 1982 and 1988, various city departments and staff committees discussed the need for a new public safety radio system. In 1988, city voters approved a $39.7 million Public Safety Bond issue that included $19.6 million for a new radio system. By late 1989, the city had engaged Sachs/Freeman Associates as the consultant to review the current system and future needs, determine specifications for the new system, develop the invitation for bid (IFB), and review vendor submissions.

The initial IFB was issued in May1991 and the fifth and final addendum was issued in May 1992. Three vendors, Ericsson, Fluor-Daniel, and Motorola responded and participated in the two-step bid process. Step one of the process was to design a system to meet the specifications set forth in the

[2] Until FCC order 92-235 was implemented in October 1997, trunking technology was authorized for the higher 800 MHz frequencies, but not for the older, lower frequency ranges.

IFBs and the second step was a price proposal for supplying the radio system. The staff committee overseeing the project recommended Ericsson as the vendor in June 1992. The council confirmed this recommendation by ordinance in August 1992, and the contract started September 1, 1992.

The original schedules provided for system completion and acceptance by January 1994, however, construction of the system was not completed until March 1995. Both the city and Ericsson were responsible for the delays in completing the system.

Transition to the new system was done in three phases, public service workers in March 1995, the Fire Department in June 1995, and finally the Police Department in April 1996. During 1995, staff in the Fire Department as well as other city departments noted a number of problems with the new radio system; holes in coverage, dropped calls, garbled transmissions, and poor in-building coverage. During a meeting on December 8, 1995, SFA, Ericsson, city, police and fire staffs concluded that, based on in-building testing conducted during the week of November 27, 1995, the signal strength performance specification was not adequate to provide in-building coverage. In September 1996 the police chief notified the city manager that the radio system was not acceptable and reliability testing should not begin. Also in September 1996 the Fire Department reported to the city manager that radio system testing should be halted until current concerns, including in-building coverage, were resolved.

On May 28, 1996, the Board of Police Commissioners passed resolution 96-6 recommending a consultant be hired to assess the radio system. RCC Consultants Inc. was selected and entered into the first of multiple contracts in January 1997. RCC continues to act as the city's outside radio expert.

In a May 1997 letter to the Police Department, RCC concluded that the "Acceptance Test Plan had numerous inconsistencies relative to the requirements of the original specifications. These inconsistencies were significant and of sufficient scope to warrant a rejection of coverage test results, a rework of test procedures and re-testing by Ericsson."

In July 1997, RCC issued a *Trunked Radio System – Network Assessment Report*. This report found "specified building and foliage losses [contained in the city's IFB] did not accurately characterize actual environmental and structural losses existing in the Kansas City area." According to the RCC report, actual building losses were fifty times those indicated by the IFB. RCC also reported that many pieces of equipment were not operating, were unusable, misaligned, or out-of-specification. All of these problems impacted the operation of the radio system.

RCC issued an *800 MHz Trunked Radio System Improvement Report* on May 5, 1998. This report investigated methods and technologies to improve the radio system, contained information on radio system maintenance, and reported the results of MPA radio testing. RCC hired an outside testing laboratory to determine whether the Ericsson MPA radio met published specifications. While the radio itself did meet specifications, the radio battery pack did not.

On May 14, 1998, the mayor appointed the Public Safety Radio System Investigating Committee. The committee's first meeting was held on May 26, 1998 and members identified a series of

questions we initially sought to answer. However, as the committee gathered information to address the original questions, we also developed findings and recommendations related to additional issues.

ANSWERS TO THE COMMITTEE'S ORIGINAL QUESTIONS

How did city staff communicate with council on the radio project?

The analysis of documents and testimony before this committee revealed that staff did not routinely communicate with council members on the radio project. Of the 3,726 documents reviewed, only 39 were communications to the full council or individual council members. Communications increased significantly beginning in 1996 when the city realized that the radio system did not perform as expected.

Technical projects of a significant magnitude that require considerable city investment and have a crucial impact on the city's operations have benefited in the past and could benefit in the future from council oversight. City government works best when staff communicates with council. Appropriate communications with council in open forums also improves public access to information.

We found no documentation and heard no testimony to support the proposition that councilmembers interfered with the award of the SFA or Ericsson contacts.

RECOMMENDATION

1. Council oversight committees should be established for major city projects. Staff should regularly report to the oversight committee on the project status.

Why did Sachs/Freeman Associates, the city's technical consultant on the radio system, recommend several different signal strengths before settling on one that is now viewed as inadequate?

Representatives of Sachs/Freeman Associates (SFA) declined to testify before the committee. The documents reviewed provided no clear indications why the signal loss specification appeared to go through several changes between 1990 and 1992. SFA initially reported in December 1990, that a 20dB loss factor be used in system design. In mid-January 1992, SFA indicated that in order to achieve 95 percent reliability, the recommended signal loss of -17.5 dB plus or minus two standard deviations must be considered. It appears that the addition of two standard deviations (14.5 dB) to the -17.5 dB recommended signal loss equates to a signal loss factor of -33dB. Later in January 1992, SFA recommended that -33 dB be used if exact building loss measurements were not obtained. In late January or early February 1992, SFA took measurements in 12 buildings to obtain samples of in-building signal losses; losses averaged

17.27 on the first floor of those buildings. SFA's final recommendation for signal loss factor was -21.5 dB, which was reflected in the city's specifications.

Motorola questioned the -21.5 dB loss factor in a February 19, 1992, letter to SFA and in a June 26, 1992 letter to the City Council. SFA, in a July 9, 1992 response, supported their signal loss specification, dismissing Motorola's concern as "ridiculous," "absurd" and "unfounded."

When did the city first know that the signal strength was inadequate?

City departments experienced radio problems as operations moved on to the new Ericsson system. Solid Waste Division staff reported reception problems and holes in coverage in March 1995. As the Fire Department and Police Department vice and narcotics personnel moved to the system, they too experienced radio problems. A September 1995 memorandum from Fire described continuing problems with in-building coverage. However, because multiple factors could contribute to problems, and Ericsson personnel had corrected several problems, the specific cause of problems was not clear.

During a meeting on December 8, 1995, SFA, Ericsson, city, police and fire staffs concluded that, based on in-building testing conducted during the week of November 27, 1995, the signal strength performance specification was not adequate to provide in-building coverage.

RECOMMENDATIONS

2. City staff, in relying on the advice or opinions of outside consultants, should seek the opinion of a second expert when staff confidence in the first consultant waivers or when there are diverse opinions and disagreements of a technical nature beyond the reasonable understanding of staff.
3. Outside experts, not city staff, should be responsible for identifying the causes of system problems.

Do the current hand-held radios and batteries meet city specifications for operation in heat and water?

An independent testing facility concluded that the MPA radio did meet published specifications, however, the radio battery pack did not.

Is the radio equipment appropriate for the intended purposes?

Fire Department personnel testified that Ericsson portable radios do not meet the special needs of fire service. The knobs are difficult to use when firefighters are wearing protective gloves. It is difficult to speak into the radio when breathing apparatus is in use. The black radio color is difficult to see in a smoky fire scene environment. And the radio will turn itself off at temperatures much lower than those experienced at fire scenes. Ericsson needs to better understand user requirements and fund research and development to improve their current radio offerings.

RECOMMENDATION

4. Users need to be consulted and their opinions and concerns taken seriously in identifying problems, developing solutions, and selecting equipment.

How did the city initially decide, without in-depth study, that the radio system would cost $19.6 million?

Committee staff did not find any documents directly supporting the development of the $19.6 million cost estimate for the radio system portion of the public safety bond issues. Based on October 1986 documents, the cost of the Fire and Police departments' public safety radio system was estimated to be $18.4 million. In October 1988, the Fire Department's estimated system cost increased, however, staff did not locate comparable figures updating the estimated cost of the Police Department's system. Motorola equipment was used for the basis of the Police and Fire departments' estimates. SFA provided a $19.4 million cost estimate for the public safety radio system.

Between 1990 and 1993 city, fire and police staffs expressed concerns about whether adequate funds would be available for the radio system. The competitive bid process used to procure the radio system was anticipated to save between 5 to 10 percent on the cost of the system over sole-source procurement. Budget constraints did not directly cause radio system problems, however, budget constraints may have influenced decisions on the process used to award the SFA and Ericsson contracts.

In the future, if unforeseen overruns occur or additional projects are planned, staff should present this information to the City Council in an effort to seek additional funding for needed projects, obtain additional input on priorities and changes to projects, or to simply notify elected officials of difficulties being experienced.

RECOMMENDATION

5. Expert input should be obtained on major capital projects prior to the establishment of budgets.

Has the city made adequate budget provisions for operating and maintaining the system?

Documents reviewed indicated that city staff and the vendor discussed maintenance issues periodically throughout the project. Generally, the comments we found were brief and contained no great detail or an indication those statements were acted upon. Ericsson's price proposal included a section on maintenance options. The city purchased a 5-year software service agreement from Ericsson in 1993 for a total of $355,000. In 1993, the Police Department estimated annual maintenance costs for radio equipment at approximately $800,000. In 1998, the city's new radio system consultant, RCC, made several suggestions related to annual software services expenditures,

infrastructure and user equipment maintenance schedules, staffing related to maintenance needs, and equipment replacement rates.

In testimony before the committee, the city's budget officer presented documents showing that the radio maintenance and operations budget increased when the city migrated to the Ericsson system. This increase occurred in part because there were more radios and in part because the system backbone required more attention. The city currently spends approximately $821,000 annually on radio repair and maintenance.

Public safety officials told the committee that the split in maintenance responsibilities between the Police Department's radio staff and Ericsson has produced a lack of accountability and resulted in finger pointing when the system did not operate properly.

RECOMMENDATIONS

6. Future maintenance and operational costs should be developed and considered for all city projects.
7. Responsibility for maintenance activities should not be divided between the city and Ericsson. One entity must be clearly responsible.

ADDITIONAL CONTRACT PROCESS ISSUES

Award of the SFA Contract

Price was the determining factor in the award of the SFA contract. The only written documents related to this contract award were price and time evaluations. No rankings or comparisons of the professional qualifications of the firms were located. Because engineering expertise and advice were critical to the success of the radio project, the selection process should have identified the most qualified firm based on measures of professional qualifications and performance and then a fair and reasonable price should have been negotiated.

The Award of the Ericsson Contract

The Ericsson contract was awarded as a purchasing contract. Price was the determining factor in a two-step evaluation procedure that vendors found unique. If the minimum requirements for technical acceptability and firm capacity were met, the firms were considered equally qualified and the only factor in the final evaluation was price. All firms were considered to be technically qualified. Testimony from both Motorola and Ericsson suggested that the award of radio system contracts is typically based on weighted evaluations that include firm qualifications, experience, technical capabilities and cost.

Ericsson Contract Document

The contract with Ericsson is composed of the city's Invitation For Bid, five addenda, instructions and conditions, and the technical and price proposals submitted by Ericsson. No single contract document exists and Ericsson drafted major portions of the contract.

Payments
The city paid Ericsson approximately 10 percent of the original contract price within 80 days of entering into this contract; paid an additional 80 percent of the price of equipment or services when equipment was accepted or installed; and withheld only the final 10 percent payment for final system acceptance. The city began ordering radios from Ericsson in September 1992, months before the original scheduled completion date (January 1994) and years before the system was operational.

Key Documents
We believe we have now been able to identify copies of the documents that make up the SFA and Ericsson contracts from the files collected by the Law Department; however, not all documents were signed (Ericsson Addendum 2) and properly dated (SFA contract). A copy of the SFA contract was not attached to the fact sheet accompanying the ordinance on file with the City Clerk's Office as required by AR 3-37. In 1995, the city auditor attempted to obtain a complete Ericsson contract from purchasing staff, however, they were unable to provide the documents at that time. No central or complete file of city contracts is currently maintained.

RECOMMENDATIONS

8. Careful consideration needs to be taken in identifying appropriate procedures for awarding city contracts. When contracting for engineering expertise, a comparative evaluation of the bidders' professional reputation, experience, technical competence, capacity/capability to perform, past performance, and proximity to project location should be the key factors, not price. The most qualified firm should be identified first and then the city should attempt to negotiate a reasonable price.
9. Future contracts between the city and Ericsson should include provisions to ensure that the Ericsson staff assigned to improve the radio system will be committed to this project until it is successfully concluded.
10. Future contracts between the city and Ericsson should be drafted by an experienced member of the city attorney's staff. Contract language should clearly establish performance criteria and payments should be tied to the successful completion of the radio project.
11. City procedures should be developed and followed which provide a systematic method of maintaining a complete set of all contract documents.

APPPENDIX A

Individuals Who Testified Before the Committee

APPENDIX A

Individuals Who Testified Before the Committee May – August 1998	
Date	Witnesses
May 26	Rich Noll, Assistant City Manager
June 2	Chief Rick Brisbin, Fire Department Chief Floyd Bartch, Police Department Mark Funkhouser, City Auditor
June 9	Major John Spellman, Police Department Don Class, former Assistant Director Technology & Information Systems Vic Miles, former Fire Department Registered Architect/Engineer
June 16	Diane Doran, former Assistant City Manager Charlie Johnson, former Commissioner of Purchasing Bill Geary, Assistant City Attorney
June 23	Bob Liepold, Police Department Communications Consultant Battalion Chief Paul Berardi, Fire Department Captain Curtis Edwards, Fire Department Sgt. Troy Entrop, Police Department
July 7	Janice Gordon, former Animal Control Administrative Officer Dean Hart, Technical Systems Manager Communications Support Unit Mark Funkhouser, City Auditor
July 21	Dan Turkisher, Senior District Sales Manager, Motorola Charles Jackson, Senior Systems Engineer, Motorola
July 28	Tom Kearns, Senior District Sales Manager, Ericsson Inc.
August 4	Janice Reed, Director of Finance Larry Plaisted, Budget Officer
August 11	Mark Funkhouser, City Auditor
August 27	Janice Reed, Director of Finance Larry Plaisted, Budget Officer Rich Noll, Assistant City Manager Mark Funkhouser, City Auditor

APPENDIX B

Memoranda to the Committee from Committee Staff

Inter-Departmental Communication

DATE: June 2, 1998

TO: Councilman Jim Glover

FROM: Mark Funkhouser, City Auditor

SUBJECT: Special Council Committee – Radio System

At the May 26 meeting of the Special Council Committee – Radio System, members discussed objectives, methods, final products, and timetables. This memorandum summarizes my understanding of the decisions made by the committee and offers suggestions on issues not specifically addressed.

Objectives

The committee agreed to investigate the following five issues:

1. How did city staff communicate with council on the radio project?
2. Why did SFA, the city's technical consultant on the radio system, recommend several different signal strengths before settling on one that is now viewed as inadequate? When did the city first know that the signal strength was inadequate?
3. Do the current hand-held radios and batteries meet city specifications for operation in heat and water? Is the radio equipment appropriate for the intended purposes?
4. How did the city initially decide, without in-depth study, that the radio system would cost $19.6 million?
5. Has the city made adequate budget provisions for operating and maintaining the system?

Methods

1. Testimony will be presented before the committee.
2. The committee did not discuss how documents would be presented or reviewed. I suggest that the City Auditor's Office staff review documentation in coordination with other staff and provide copies of documents that are significant or relevant to the objectives of the committee. Based on the committee's initial discussion, we will also prepare a chronology, an index of all documents, comparison of planned versus

actual expenditures, a list of project vendor payments, and a spreadsheet of non-safety bond funds allocated in support of the radio system.

Final Product

The committee's final product will be a written report. The committee will write the report and the City Auditor will act as "scribe." The report will address the five initial objectives, identify weaknesses in the city's processes that allowed an expensive public safety radio system to be built that did not meet the city's needs, and make recommendations addressing controls or processes to prevent similar problems in the future.

Timetables

After the committee agrees to a list of witnesses, timetables and target dates will be established.

Agenda For June 2, 1998 Meeting and Future Witnesses

The committee plans to hear testimony from Chief Floyd Bartch, Kansas City Missouri Police Department, and Chief Rick Brisbin, Kansas City Missouri Fire Department on June 2. A list of potential witnesses for future meetings will be presented for discussion.

The committee did not specifically address how potential witnesses would be contacted. I suggest that staff make the initial contact and the committee's chairman then formally extend a written invitation. Witnesses should be provided with a list of the committee's objectives in order to focus their preparation. Testimony will include questions from the committee and could include prepared written or oral statements.

Inter-Departmental Communication

DATE: July 10, 1998

TO: Councilman Jim Glover, Chairman, Special Council Committee Radio System

FROM: Mark Funkhouser, City Auditor

SUBJECT: Radio Improvement Project Recommendations

As I testified at the committee meeting on July 7, 1998, I recommend the following with regard to the Radio Improvement Project:

1. A full-time project manager for the city should be appointed.

2. There should be substantial involvement of an experienced member of the city attorney's office

3. Purchasing contracts are for routine acquisitions and do not involve significant council oversight. The radio improvement project is not a routine acquisition and therefore should not be a purchasing contract.

Inter-Departmental Communication

DATE: August 11, 1998

TO: Chairman Jim Glover and Members of the Special Council Committee – Radio System

FROM: Mark Funkhouser, City Auditor

SUBJECT: Review of Public Safety Radio Documents

Based on our review of the 3,739 documents related to the public safety radio system provided by the Law Department, we have reached the following conclusions:

Staff Communications with Council

We found evidence of little communication with the City Council during the design and construction phases of the radio system. City Council involvement increased significantly in 1996 to 1998 when the city realized that the radio system did not perform as expected.

Technical projects of a significant magnitude that require considerable city investment and have a crucial impact on the city's operations have benefited in the past and could benefit in the future from council oversight.

The Award of the SFA Contract

Price was the determining factor in the award of the SFA contract. The only written documents related to this contract award were price and time evaluations. No rankings or comparisons of the professional qualifications of the firms were located. Because engineering expertise and advice were critical to the success of the radio project, the selection process should have identified the most qualified firm based on measures of professional qualifications and performance and then a fair and reasonable price should have been negotiated.

Careful consideration needs to be taken in identifying appropriate procedures for awarding hybrid contracts. When contracting for engineering expertise, a comparative evaluation of the bidders' professional reputation, experience, technical competence, capacity/capability to perform, past performance, and proximity to project location should be the key factors, not price.

The Award of the Ericsson Contract

The Ericsson contract was awarded as a purchasing contract. Price was the determining factor in a unique two-step evaluation procedure. If the minimum requirements for technical acceptability and firm capacity were met, the firms were considered equally qualified and the only factor in the final evaluation was price. All firms were considered to be technically qualified. Testimony from both Motorola and Ericsson suggested that the award of radio system contracts is typically based on weighted evaluations that include firm qualifications, experience, technical capabilities and cost.

The selection of the firm to supply the city's radio communications needs should have included either a determination of the most qualified firm with price then negotiated or a weighted evaluation process that included criteria addressing the firms' qualifications, experience, technical capabilities, and cost.

Ericsson Contract Document

The contract with Ericsson is composed of the city's Invitation For Bid, five addenda, instructions and conditions, and the technical and price proposals submitted by Ericsson. No single contract document exists and Ericsson drafted major portions of the contract.

The city should draft its own contracts as clear and concise documents with performance criteria clearly defined and final contract provisions specifically stated.

Payments

The city paid Ericsson approximately 10 percent of the original contract price within 80 days of entering into this contract; paid an additional 80 percent of the price of equipment or services when equipment was accepted or installed; and withheld only the final 10 percent payment for final system acceptance. The city began ordering radios from Ericsson in September 1992, months before the originally scheduled completion date (January 1994) and years before the system was operational.

The amount of money held back in a contract should be established at a level to encourage project completion. Equipment should not be purchased before it is needed.

Budget Constraints

Between 1990 and 1993 city, fire and police staffs expressed concerns about whether adequate funds would be available for the radio system. The competitive bid process used to procure the radio system was anticipated to save between 5 to 10 percent on the cost of the system over sole-source procurement. So while budget constraints did not directly cause radio system problems, budget constraints may have influenced decisions on the process used to award the SFA and Ericsson contracts.

In the future, if unforeseen overruns occur or additional projects are planned, staff should present this information to the City Council in an effort to seek additional funding for needed projects, obtain additional input on priorities and changes to projects, or to simply notify elected officials of difficulties being experienced.

Key Documents

We believe we have now been able to identify copies of the documents that make up the SFA and Ericsson contracts from the files collected by the Law Department; however, not all documents were signed (Ericsson Addendum 2) and properly dated (SFA contract). A copy of the SFA contract was not attached to the fact sheet accompanying the ordinance on file with the City Clerk's Office as required by AR 3-37. When we attempted to gather a complete Ericsson contract from the Purchasing Department in 1995 we were unsuccessful. No central or complete file of city contracts is currently maintained.

Procedures should be developed and followed which provide a systematic method of maintaining a complete set of all contract documents.

CC: Robert L. Collins, City Manager

Inter-Departmental Communication

DATE: September 1, 1998

TO: Chairman Jim Glover and Members of the Special Council Committee – Radio System

FROM: Mark Funkhouser, City Auditor

SUBJECT: Radio System Issues

During testimony at the committee hearing on August 27, 1998, the following issues were discussed for possible inclusion in the committee's final report.

1. City government works best when staff communicates with council. Communications with council in open forums also improves public access to information.
2. Users need to be consulted and their opinions and concerns taken seriously in identifying problems, developing solutions, and selecting equipment.
3. The process for hiring consultants should begin with the identification of the most qualified individual or firm. Then the city should attempt to negotiate a reasonable price for that consultant's services.
4. City staff, in relying on the advice or opinions of outside consultants, should seek the opinion of a second expert when staff confidence in the first consultant waivers or when there are diverse opinions and disagreements of a technical nature beyond the reasonable understanding of staff.
5. Future contracts between the city and Ericsson should include provisions to ensure that the Ericsson staff assigned to improve the radio system will be committed to this project until it is successfully concluded.
6. Future contracts between the city and Ericsson should tie payments to the successful completion of the radio project.
7. Our outside expert, not city staff, should be responsible for identifying system problems.
8. Expert input should be obtained on major capital projects prior to the establishment of budgets.
9. Future maintenance and operational costs should be developed and considered for all city projects.
10. Accountability and responsibility for maintenance activities should be clearly defined.

cc: Robert L. Collins, City Manager

Radio System Issues Memo.doc

Inter-Departmental Communication

DATE: September 17, 1998

TO: Chairman Jim Glover and Members of the Public Safety Radio System Investigating Committee

FROM: Mark Funkhouser, City Auditor

SUBJECT: Written Confirmation of Previous Testimony

At your request, I am providing written confirmation of my previous testimony before the Public Safety Radio System Investigating Committee. As I testified on September 8, 1998, my review of documents found no support for the proposition that councilmembers interfered with the award of the SFA or Ericsson contracts. In addition, based on the documentation reviewed, budget decisions did not directly cause radio system problems.